

# NAG Library Routine Document

## F06FEF

**Note:** before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

### 1 Purpose

F06FEF multiplies a real vector by the reciprocal of a scalar.

### 2 Specification

```
SUBROUTINE F06FEF (N, ALPHA, X, INCX)
  INTEGER          N, INCX
  REAL (KIND=nag_wp) ALPHA, X(*)
```

### 3 Description

F06FEF performs the operation

$$x \leftarrow \frac{1}{\alpha}x$$

where  $x$  is an  $n$ -element real vector scattered with stride INCX and  $\alpha$  is a real nonzero scalar.

### 4 References

None.

### 5 Arguments

- |    |                                                                                                                                         |                     |
|----|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1: | N – INTEGER                                                                                                                             | <i>Input</i>        |
|    | <i>On entry:</i> $n$ , the number of elements in $x$ .                                                                                  |                     |
| 2: | ALPHA – REAL (KIND=nag_wp)                                                                                                              | <i>Input</i>        |
|    | <i>On entry:</i> the scalar $\alpha$ .                                                                                                  |                     |
|    | <i>Constraint:</i> ALPHA $\neq$ 0.0.                                                                                                    |                     |
| 3: | X(*) – REAL (KIND=nag_wp) array                                                                                                         | <i>Input/Output</i> |
|    | <b>Note:</b> the dimension of the array X must be at least $\max(1, 1 + (N - 1) \times \text{INCX})$ .                                  |                     |
|    | <i>On entry:</i> the $n$ -element vector $x$ . $x_i$ must be stored in $X(1 + (i - 1) \times \text{INCX})$ , for $i = 1, 2, \dots, N$ . |                     |
|    | Intermediate elements of X are not referenced.                                                                                          |                     |
|    | <i>On exit:</i> the updated vector $x$ , stored in the same array elements used to supply the original vector.                          |                     |
| 4: | INCX – INTEGER                                                                                                                          | <i>Input</i>        |
|    | <i>On entry:</i> the increment in the subscripts of X between successive elements of $x$ .                                              |                     |
|    | <i>Constraint:</i> INCX > 0.                                                                                                            |                     |

## 6 Error Indicators and Warnings

None.

## 7 Accuracy

Not applicable.

## 8 Parallelism and Performance

F06FEF makes calls to BLAS and/or LAPACK routines, which may be threaded within the vendor library used by this implementation. Consult the documentation for the vendor library for further information.

Please consult the X06 Chapter Introduction for information on how to control and interrogate the OpenMP environment used within this routine. Please also consult the Users' Note for your implementation for any additional implementation-specific information.

## 9 Further Comments

None.

## 10 Example

None.

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